

# data

GOVERNMENT RESEARCH AND DEVELOPMENT DIGEST

VOL. 2, NO. 10



Night Viewing SNIPERSCOPE  
(See page 10-17)

In this issue . . .

SIGNIFICANCE OF THE NIGHT VISION SYMPOSIUM

# data

## DATA PUBLICATIONS

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U.S.-\$12.00 for 1 year; \$22.00 for 2 years.  
Foreign-\$15.00 for 1 year; \$28.00 for 2 years.  
Available to Government personnel through Federal Supply System, FSS Stock Requisition Number 7630-148, Index No. 1256, FSS Section 76, Page 90.

Checks may be made payable to DATA.

Published Monthly. Second-class mailing privileges authorized at Washington D. C.

Title registered United States Patent Office

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## briefings!

### MORE FUND CUTS COMING: R&D WILL NOT BE SPARED:

Already-cut progress payment percentages will be reduced still further. DOD Directive 7800.5 of August 10 dropped progress payments to 75 percent of total costs. A new directive, not yet released, will drop these still further -- 65 percent of total costs is reliably said to be figure. BuAer source.

R/Adm. Rawson Bennett, Chief, Office of Naval Research, allows us to quote him as saying government tightening on contracts will not spare research and development bids. These will be hard hit in coming months. Government will demand "a whole lot more" for each dollar.

Viscious circle in first cutting major contracts and then throwing back smaller contracts to soothe cut producers is dangerous, has given rise to cries of favoritism and politics from some contractors who feel these awards are "channeled tranquilizers" following stoppage of major projects and are not fairly given. Winner of "consolation" contract continues to brood over loss of original major project and contracting offices of the government are criticized by both contractors and Congress for their practices. Lack of money for awards complicates the picture and aggravates situation. Nobody seems to be winning.

### ARMY CONSTRUCTION PROJECTS ANNOUNCED: LIST AVAILABLE:

There are 203 individual construction projects in FY 1958 civil works program of Army Engineers, representing 166 continuing projects and 37 new starts or resummptions. Among largest individual construction amounts is one for \$44 million for work along Mississippi River and tributaries in seven states. Oahe Reservoir in S. Dak. gets \$27 million. Pentagon DOD press release listing all projects and dollar amounts allocated is available to DATA and DATA DAILY subscribers on request at no charge. Ask for OPI release 853-0827, Army Engineer Appropriation, and write to DATA.

### CONTRACT AWARDS TO SMALL BUSINESS SHOWN INCREASING:

Percentage of prime military contract procurement awarded to small business suppliers and nonprofit concerns was increased from 16.3 percent in first half of FY 1957 to 23.2 percent in second half.

## MUCH GOING ON AT ANDREWS AFB:

Andrews Air Force Base on Maryland's Suitland Parkway, just 35 minutes from the Pentagon, will become military air hub of the Capital. Here are some moves now "firm" for this base: 1. ARDC will establish its headquarters at Andrews, pulling out of Baltimore; 2. The Naval Academy will have its airfield facilities at Andrews — \$3.2 million appropriated for move; 3. Naval Air Reserve Training Units at Anacostia NAS in Washington, D. C. have been alerted that they will be re-based at Andrews by 1960; 4. Military Air Transport Service headquarters and components currently at Andrews will shift to Scott AFB in Illinois.

Andrews, a huge base, has runways long enough for touch-and-go jet landings. Longest strip is 7200 feet.

## JOHN R. TOWNSEND NAMED SPL. ASST. TO ASST. SECDEF R&E:

John R. Townsend, until now director of materials and standards engineering at the Sandia corporation, has been named Special Assistant to the Assistant SecDef for Research and Engineering. He will also serve as Director of the Office of Fuels, Materials and Ordnance.

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## OPERATIONAL REQUIREMENTS

*Further information is available through DATA.*

### 10D636. HIGH TEMPERATURE RANGE PLASTIC OR ELASTOMER

SCOPE.—Develop a plastic or elastomeric material for use at operating temperatures from  $-90^{\circ}\text{F}$  to  $+550^{\circ}\text{F}$  or higher to  $700^{\circ}\text{F}$ , being stable and resilient to the same order as hydraulic O-ring seal compound to Specification MIL-P-5516. Class B at  $-65^{\circ}\text{F}$  to  $+160^{\circ}\text{F}$ .

MILITARY APPLICATION.—For use in manufacture of hydraulic and pneumatic system seals and gaskets at operating temperatures between  $-90^{\circ}\text{F}$  and over  $550^{\circ}\text{F}$ .

### 10D637. NEW OXYGEN MASK MATERIAL

SCOPE.—Develop a material suitable for use in an oxygen mask. The material must be capable of being molded into the form of a face mask and retain a putty-like consistency indefinitely so that after performing, the mask can be individually formed to a person's face and then "fixed" in this final shape by a simple process such as applying heat or dipping into a fixing solution. After setting, the material should have essentially the same characteristics that are found in present rubber type oxygen masks which are molded into various sizes.

MILITARY APPLICATION.—The material for an oxygen mask will be used to fit individuals that cannot obtain an adequate face seal within the size range of standard oxygen masks. It must be resistant to aging, capable of operation over temperature extremes, and non-toxic.

### 10D596. INTERNAL DATA COLLECTION SYSTEM

SCOPE.—A new method is required for making accurate measurement of physical phenomena within a test vehicle to be determined under extreme conditions not suitable for human occupation. These phenomena are acceleration, altitude, pressure, temperature, mechanical stress, electrical and radiation measurements, shaft positions, etc. Measurements are to be made and transmitted instantaneously or with the least possible delay and recorded in useable form or introduced into a computer for further evaluation. Such techniques as digitalization of data directly after pickup by the sensing element is one step in this direction. Other steps involve investigation of noise inherent in electromechanical systems, stability studies and application of high speed computers for data conversion.

### 10D635. HYDRAULIC FLUID FOR AIRCRAFT

SCOPE.—Hydraulic fluid, having relatively flat viscosity curve between  $-100^{\circ}\text{F}$  and  $+700^{\circ}\text{F}$ , viscosity at  $-100^{\circ}\text{F}$  of approximately 500 centistokes and 5 centistokes at  $700^{\circ}\text{F}$ , specific gravity of 0.7 to 1.1, non-toxic, stable over the entire temperature range, non-corrosive to all materials at all temperatures, have hydrolytic stability, preferably be non-flammable or at least have fire and flash points above  $700^{\circ}\text{F}$ , and suitable lubricity.

MILITARY APPLICATION.—For use in high speed military aircraft hydraulic systems, shock absorber struts, wheel brakes and similar service.



## AIR & SPACE

### 473. CERAMIC RADOME MAY BE ANSWER TO RE-ENTRY:

ARDC seeks materials other than plastic but good conductors of radar waves for use in missiles which re-enter atmosphere at very high speed and high temperature. Radomes, normally made of reinforced plastic, have tendency to char and lose strength at these extreme heats. Gladding, McBean and Company of West Coast has completed the first ten prototype "high-alumina" ceramic radomes under ARDC contract. They are 6 inches in diameter and 18 inches high, meeting electrical, thermal and dimensional requirements of AF. Alumina is mixed with organic binder, sprayed on chrome plated steel core, dried, and then whole is covered with neoprene, fired twice. ///ARDC 252 0924/

### 474. FIRST JET FOR PHOTOS EXCLUSIVELY:

First jet to be designed for photo missions exclusively, the A3D-2P SKYWARRIOR by Douglas, will contain more cameras, fly farther and faster than any other Navy jet while taking continuous movie footage, Navy Office of Information says. Cousin plane, A3D-2T SKYWARRIOR, first Navy jet high-altitude bomber trainer, will carry pilot, bombardier, instructor, and six students. Contains dual bombing system, one in pilot compartment and one aft in fuselage. ///Pentagon OPI 0822/

### 475. LAUNCHING HIGH-SPEED CRAFT FROM SHORT FIELDS SEEN:

Revolutionary method for launching high-speed aircraft from short airfields is being tried by Army. Utilizing turbine-powered catapult, the device consists of six jet engines in a circle with exhaust gases flowing into central turbines. Turbines drive drum cable system connected to shuttle that operates on track. Plane is attached to shuttle by bridle, such as used on carriers. Launching is under one-fifth normal takeoff run. ///Military Review 07/

### 476. DEVICE SECURES TAIL ROTOR BLADES OF HELICOPTERS:

Device developed by Quantico Marine Helicopter Squadron secures tail rotor blades of craft. Four tubular steel arms wrapped with tape hook into and engage roots of blades; top long arm is tied to pylon-fold hand grip of the plane. Movement in high winds prevented. ///Nav Air News 09-38/



This is the first photo ever released to the public of a jet aircraft, a Lockheed F-80 radio-controlled drone, being destroyed by a missile, the Army's NIKE-HERCULES. Other intercept photos have shown missiles destroying propeller-engine aircraft, but DATA prints here the first photo showing the destruction of a flying jet by a missile. The photo was taken at the White Sands Proving Grounds

///Army C-1 2329-30/

#### 477. ARMY'S CARIBOU WILL USE IMPROVISED STRIPS:

In 1959 Army will take delivery on five twin-engine DHC4 transport De Havillands. CARIBOU is all-weather craft for rapid movement of troops, equipment, supplies. Designed to operate on improvised landing strips as short as 800 feet. Has 27 seats. Cargo payload will be 6000 pounds.

///Army Aviation Digest 09-40/

#### 478. RASCAL SQUADRON SCHEDULED:

Starting in October all launchings of air-to-surface guided rocket missile RASCAL will be made from B-47s flown by SAC crews for training. New RASCAL squadron will become operational as soon as possible. This missile, 32 feet long and 4 feet in diameter, streaks toward target at supersonic speed after bomber has changed course and headed home.

///Armed Forces press release 0916/

#### 479. PROPULSION BY DUCTED FANS IN WING STUDIED:

Utilization of ducted fans in wing for propulsion as well as for lift appears promising. Vertol has Army contract to explore aerodynamic effects of transition from hovering to forward flight, how airflows from fans and various wing shapes interact, possibility of utilizing ducted fans for propulsion, and their use in control surfaces. Latter application already adapted for Vertol 76, first tilt-wing craft ever built. Has two ducted fans in tail surface to control hovering.

///Vertol/

## COMMUNICATIONS / ELECTRONICS

### 480. TV CAMERA WORN WITHOUT WEARINESS:

Harness of aluminum, felt, foam rubber padding, enables TV cameraman at Army's Huntsville missile mill to keep mobile with missile control firing truck for two hours without tiring. Close-ups and wide-angle views are shot for trainees at nearby vantage point. Two Signal Corpsmen developed novel harness. ///Army News Features 0919/

### 481. COMPONENTS EVALUATION CONTRACT AWARDED:

Evaluation of electronic components is part of three-fold contract awarded by Army Signal Corps to Cook Electric. Work at Cook's Inland Testing Labs, Morton Grove, Ill., will include preparation of military specifications on new products and incorporation of non-standard parts into existing military specifications. Initial investigations will be on plastic encased coils, subminiature trimmer capacitors, piston trimmer capacitors, tantalum solid-electrolyte capacitors. US and UK batteries will be compared. ///Electronic News 0916/

### 482. LIQUID LEVELS IN TANKS MEASURED WITH TRANSISTORS:

New transistorized electronic system for measuring liquid level in remote storage tanks has been introduced by Texas Instruments of Dallas. "Data-gage" operator dials particular tank among 100 that he wants to monitor and is connected through field selector unit to gauge on that tank. Dynamic surface finder is activated and data is telemetered to receiver console. ///Texas Inst. release 0909/

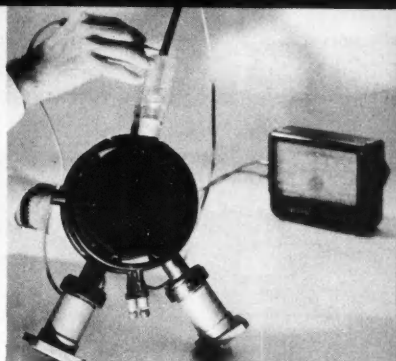
### 483. SUPERSONIC WAVES TO BE PHOTOGRAPHED, STUDIED:

Possible controls of explosion wave or detonation wave may be accomplished as a result of study of photographs of these phenomena. AF is using highspeed photography to catch views as shock waves are set up in jet and rocket engines by combustion of fuel. To date these waves have been uncontrolled and harmful to engines. Waves travel up to ten times speed of sound and accompanying flames reach 6000 degrees (F) or 1/10 as hot as sun. Beckman and Whitley camera used by WADC in unique test chamber. Photos available from ARDC Office of Information Services, Box 1395, Baltimore, Md. ///ARDC 0913/



Called the AMPLITRON, a new jam-proof electronic tube has been developed by the Army. Weighing only 10 pounds, it will permit lighter, more compact radar equipment to be built. Different in appearance but working on the same principle as the ordinary TV or radio tube, the AMPLITRON has a disc-shaped metal case with power connections extending from the edges. Raytheon Manufacturing Co. worked with Fort Monmouth engineers in developing the tube.

///Fort Monmouth SC-510595/



#### 484. PHILCO GETS \$10 MILLION TO BUILD ARMY RELAYS:

Philco Corporation's Government and Industrial Division in Philadelphia has received an Army Signal Corps contract of approximately \$10 million to build radio relay units and parts for FM multi-band units used in multi-channel field telephone circuits. ///Army Sig Corps/

#### 485. PORTABLE ISOTOPE CAMERA DEVELOPED AT NOL:

A safe, portable container for radioisotopes used to x-ray ship structures has been developed at the Naval Ordnance Laboratory. The isotope "camera" consists of a heavy container made of Mallory metal, about 40 percent more impervious to x-rays than lead, and a hood which maintains a fixed source-to-film distance and serves as a radiation shield. A pyramid-shaped plug is removed from the container to expose the isotope.

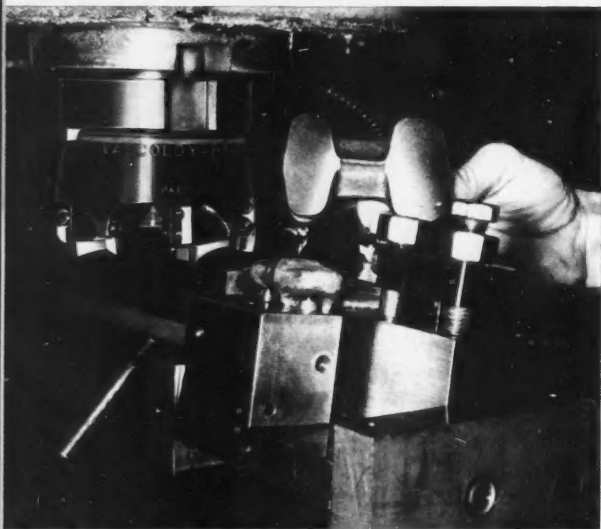
The use of radioactive isotopes for nondestructive testing of ship structures is relatively recent. With the advantages of the lightweight isotope camera, radiography and radioisotopes can replace the conventional x-ray inspection equipment in many applications and this form of inspection is well suited to shipboard use. ///NOL Report 09-4/

#### 486. READY INDEX FOR ABSTRACTS IS ELECTRONIC:

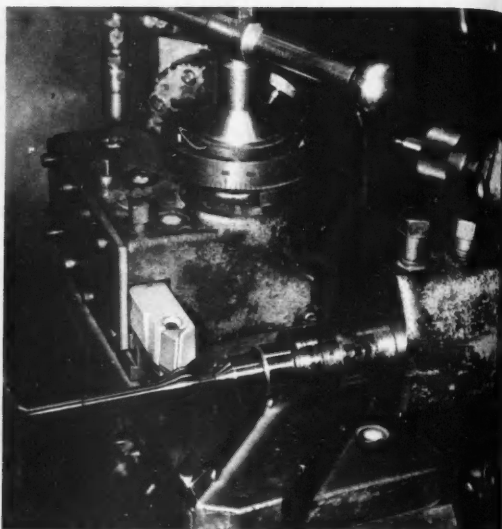
National Bureau of Standards is developing "Microcite" technique for use with punch-cards to increase effectiveness of literature searching in its reference service on citations and abstracts. Several features under investigation, some involving light shining through holes in punch-cards. Bureau has maintained instrumentation reference service sponsored by Dept. of Defence and AEC to help government scientists obtain existing information without time-consuming literature search.

///NBS 08 Rept 2144/

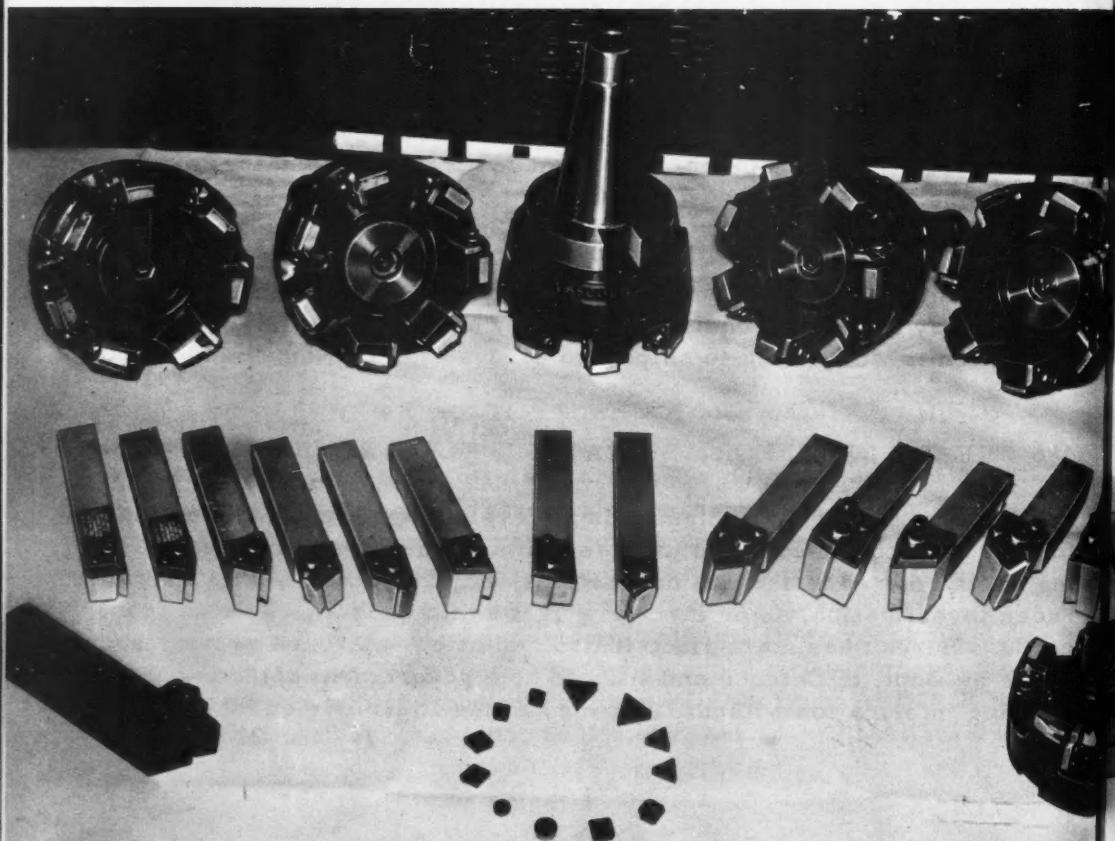
# From V-R...New To



V-R throw-away insert face mill cutter machining titanium.



V-R toolholder and carbide insert turning titanium.



Display of typical Vascoloy-Ramet throw-away insert type tools used at large aircraft plant.

# Is to Reduce Costs

## V-R Throw-away Carbide Insert Tooling Eliminates Carbide Grinding, Reduces Down time and Increases Production

Mechanical toolholders with clamped-in throw-away type carbide inserts have opened up new opportunities for major cost reductions throughout the metal working industries. Unlike other types of cutting tools which must be removed from the machine for resharpener, the toolholder permits a change of cutting edge simply by loosening a clamp and indexing the carbide insert to a new cutting edge—or replacing the insert when all its cutting edges are worn.

As illustrated in the picture at the lower left, Vascoloy-Ramet manufactures a complete line of toolholders and carbide inserts as well as a line of face milling cutters employing the clamped-in insert principle. Here are some of the advantages of this type of tooling:

**Faster Change—Less Down time.** Removal and replacement of the carbide insert is accomplished in seconds without removal or adjustment of the toolholder itself.

**No Grinding.** Throw-away type inserts completely eliminate the need for costly diamond wheel grinding. When all of the cutting edges on an insert are used up the insert is thrown away.

**Lower Inventory Costs.** Carbide inventories dollar-wise and space-wise, are substantially less than with brazed type carbide tools.

**Low Cost Per Cutting Edge.** Economical throw-away type carbide inserts cost but pennies per cutting edge. For example, a triangular insert used in a negative rake toolholder has six usable cutting edges purchasable for as little as 10c per edge. The corresponding brazed tool would cost as high as 83c

per cutting edge taking into account the original cost of the tool as well as the regrinding cost.

Following is a typical example of savings achieved with V-R throw-away type insert face mill cutter in a large aircraft plant.

**Job:** Machining AMS 4925 titanium bar stock on Cincinnati vertical mill. Depth of cut from .08" to .220". Feed .004 IPT. Speed 95 RPM (100 SFM). Total stock removal 1186 cubic inches. V-R grade 2A5 carbide throw-away inserts.

**COST COMPARISON**

	Old Method	New Method
Tool	Brazed tip cutter	Vascoloy-Ramet 4" dia., 30° lead angle neutral rake cutter with V-R Grade 2A5 3/4" square carbide throw-away insert
Stock removal per cutting edge	25 cu. in. per grind	99 cu. in. per corner (4 usable corners)
Carbide cost	\$20.00	\$33.60
Regrind cost	\$94.00	None
Down time	470 minutes for cutter changes—\$94.00	24 minutes for insert changes—\$4.80
TOTAL COST Tool repair and down time	\$208.00	\$38.40

For complete data on cost saving V-R throw-away insert type tooling, call your local V-R Representative or Distributor, or mail the coupon today.

See the latest developments in carbide tooling at our  
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## CONSTRUCTION

Fast-Moving Paratroopers of the 82nd Airborne division are supported by a new earth auger that digs huge holes in record breaking speeds to provide underground storage facilities and waste disposal pits for the atomic army. This equipment was developed by the U.S. Army Engineer Research and Development laboratories, Fort Belvoir, Virginia.  
///Fort Belvoir APS-57-10543/



### 487. PRESSURE-FED BRUSH PAINTS IN AWKWARD LOCATIONS:

Pressure-fed brush for painting awkward areas and behind flanges or other places impossible to coat properly with spray gun has been developed by two Philadelphia Naval Shipyard employees. Paint is fed by a nonferrous tube, with a feed control valve, through the ferrule of the brush. Tube is wrapped and forms handle. ///BuShips Journal 09-45/

### 488. JET AGE NEEDS BLUEPRINTED BY ICAO:

International Civil Aviation Organization panel has outlined needs seen as urgent. Airfield pavements are needed that resist heat and blast effects at run-up areas and at ends; special attention should be given to joints and jointing materials in concrete; resistance to chemical effects of spilled jet fuel is pavement factor. Runway distance markers and devices in craft to measure acceleration will help pilot during landings at increased speed. Traffic densities point up need for medium and short-range navigation aids providing pictorial representation to pilot. Storage facilities need to be designed and built to house jet accessories.  
///ICAO News Release 0923/

### 489. GIANT FACILITY FOR ICBM TRAINING UNDERWAY:

Hundred million dollar AF facility on site of former Camp Cook in Los Angeles area, now under construction, will house training units handling ICBMs. Center will be open in about 14 months. ATLAS and TITAN training classes will be held there as will THOR IRBM unit instruction. Construction of the new missile training center gives rise to speculation that AF will construct a South Pacific missile range. South Atlantic missile range, only range now available, will not be fully prepared for ICBM testing for at least a year as some tracking stations still must be built.  
///Military Review 08-66/

## 490. RADIOISOTOPES SAVE INDUSTRY \$500 MILLION YEARLY:

AEC estimates that radioisotopes, those materials made "hot" in atomic reactors, today save industry \$500 million per year and will probably save many times that in future years. Half of the 500 largest U. S. corporations now use devices containing radioactive materials.

///AEC 0923/

## 491. BOOSTED BID SNAGS INITIAL WORK ON REACTOR:

When American Machine and Foundry boosted its bid up to \$3 million on construction of atomic project at Elk River, Minn., it snagged the start of this work. Plant was one of four government nuclear reactors legislated for 1957 building. In private reactor field, negotiations go forward between AEC and two groups proposing reactors, Consumers Public Power of Nebraska and Northern States Power of Minneapolis. Former would build sodium graphite type and latter, boiling water type.

///AEC 0917/

## 492. SIMULATED NUCLEAR BLAST TO TEST MATERIALS:

Steel and reinforced concrete beams can be subjected to simulated atomic blasts through test equipment now under construction in Navy lab at Port Hueneme. Primacord will supply energy for tests. Explosion cylinder will produce pressures of about 185 pounds per square inch, directing force into pit below where materials to be tested will be.

///Navy CEC 0922/

## 493. NUCLEAR WEAPON TEST SERIES ON ENIWETOK IN APRIL:

The AEC and Dept. of Defense have made a joint announcement that a new series of atomic-weapon tests will begin at the Eniwetok proving grounds in the Pacific next April. The tests will be "advance development of weapons for defense against aggression whether airborne, missile-borne or otherwise mounted." The announcement also said that "further development of nuclear weapons with greatly reduced radioactive fall-out so that radiation hazard may be restricted to the military target" will be one of the objectives of the tests. The United Nations will be invited to send observers.

///AEC and DOD 0923/



### 494. NAVAL ORDNANCE LAB PLASTIC RESEARCH RESULTS OUT:

Two new significant results have been announced by the Naval Ordnance Lab in their most recent report:

1. A new test method for the evaluation of strength properties of parallel glass fiber reinforced plastics.
2. Favorable results in the use of lightweight cartridge cases made from plastic.

1. Two scientists at NOL have designed and constructed an apparatus for the fabrication of six-inch diameter reinforced-plastic test rings. These rings are the basis of specimens from which flexural, tensile, and horizontal shear strength data may be obtained. This innovation is of special interest to the Navy since unwoven fiber plastics, the parallel glass fiber reinforced plastics, are cheaper weightwise than woven glass fiber plastics by up to 90 percent. In actual cost they are also less expensive.

2. In firing tests with a 105 millimeter howitzer, plastic cartridge cases have shown themselves capable of withstanding gas pressures ranging from 6000 to 35,000 pounds per square inch. At the instant of percussion the flame temperature inside the case is 2400 degrees Kelvin. Despite the sudden temperature and pressure changes, the cartridge cases emerge from the gun breech virtually unscathed. Many of them, in fact, could be used repeatedly. Plastic material used in these cases is a special formulation developed for NOL by the Borg-Warner Corp. Similar to the material used in portable radio cabinets, it is named Cylolac.

More information on these and other NOL developments is available from Technical Information Office, Naval Ordnance Lab, 1-179 White Oak, Silver Spring, Md.

///NOL 09-1/

### 495. MAGNETIC RUNWAY SWEEPER MAKES DEBUT:

The jet age has made clean runways a necessity. Small bits of matter that can get sucked into aircraft intakes can cause serious damage, endanger flight. Several companies now making runway sweepers using vacuum principles. Sabre Metal Products of Illinois now demonstrates their new sweeper which is combo vacuum-electromagnet. The Sabre sweeper cleans paths from 8 to 12 feet wide.

///Av Daily/

#### THIS CARGO PLANE HAULS 50 TONS

Specially designed for Military Air Transport Service this huge 50-ton cargo carrier is designed to haul greater pay loads on longer flights than any other aircraft now in production. Its great range permits non-stop overseas service.

///Air Force Photo 157254 A.C./



Douglas C-133

#### 496. STREAMLINED PROCESS CUTS DOWN BLUEPRINT STORAGE:

Size of Navy's massive blueprint library and time consumed in getting blueprints ready for work may be greatly reduced through operation of a new plan. Philadelphia Naval Aviation Supply Depot personnel devised system as follows: Blueprints are put on 35mm film, glued to punch cards, and cards are filed. When plane repair station needs a blueprint, films are enlarged to full-sized working drawings at rate of 20 per minute. Single plane may require 80,000 drawings and new speedy scheme may save up to \$1.7 million each year, besides saving in storage space. Combining three processes - microfilming, IBM-type punch cards, and electrostatic copying - cost is half million, but results well worth it. Major contractors now urged to supply micro-filmed drawings for all equipment they deliver to Navy. Repair stations and carriers may soon have their own stacks of blueprint cards.

///Phila. NavAv Supply Depot/

#### 497. NBS WORKS TO MEASURE TENTH MILLIONTH OF AN INCH:

Need for more precise gauge blocks has caused Congress and 11 firms to put up research money to develop device needed to split inch into ten million parts. National Bureau of Standards will go forward with work. Missile age means millionth of inch yardstick is outmoded. When accuracy is better there will be less refitting and less loss of raw materials. Reliability will be improved.

///NBS/

#### 498. IBM UNIT COMPUTES TANK CAPACITIES:

Use of IBM 650 digital computer in calculating tank capacities at Puget Sound Naval Shipyard has shortened time on tank problem from 760 man-hours for manual process to 10 man-hours for electronic processing.

///BuShips Journal 09-12/

## ORDNANCE

The new SNIPERSCOPE, a greatly improved version of the night viewing device first introduced during the late stages of World War II, gives the Foot Soldier (right) round-the-clock combat punch. It is attached to a conventional rifle and supersedes use of the binoculars and unadorned rifle (shown at the left) at night.

///Army Info APS-57-10538/



### 499. TWO NAVY ORDNANCE CONTRACTS TO WHITE SEWING MACH:

Two contracts were awarded to White Sewing Machine by the Bureau of Ordnance on Sept. 18. One for \$250,000 will cover the production of prototypes of a new type torpedo tube to be used in launching torpedoes from the decks of destroyers and patrol vessels. White developed the new torpedo tube under a previous research and development contract. The new torpedo tube is of plastic.

The second contract, for \$75,000, is for the development of a plastic case for mines by the use of centrifugal plastic casting technique that promises very low cost mine cases. ///Pentagon OPI 0918/

### 500. MISSILES AT 12,000 MPH FIRED FROM TWO-STAGE GUN:

Hypervelocity gun developed at NOL will fire missiles in two-stage operation, sending them at speed of 12,000 mph for research purposes, not as weapons. First stage in technique results in compression and heating by chemical reaction and second stage gives further compression and heating by shock. No large volume of gas is needed and there are no moving parts to malfunction. Action takes place inside front and rear sections of one gunbarrel.

Naval Ordnance Lab scientists have already started building a larger gun. ///Pentagon OPI 0920/

### 501. MACHINE COUNTS SMALL PARTS AND PACKAGES THEM:

Naval Gun Factory has counting machine that can count wide variety of small parts and then package them at rate of 30 packages a minute. Items with maximum dimension of 7/8 inch wide by 7/8 inch deep by 2-1/2 inches long are processed. The machine does not need individual product feed dies, is used in combination with an intermittent motion packaging machine. ///BuShips Journal 09-37/

## MAGAZINE PREVIEWS & REVIEWS

### ORDNANCE (Available Nov. 1, 1957)

November issue features an article by the new Air Force Chief of Staff, Gen. Thomas D. White, entitled "Perpetual Preparedness" on the maintenance of sea and ground forces. Ordnance also features for November a three-page insert on combat vehicles.

### MISSILES & ROCKETS (Available Oct. 1, 1957)

Complete run down of missiles of the world, listing all major countries and the missiles in use by them. M/R for October also lists all countries carrying on a research and development program. Figures for production and photos are given where available.

### SIGNAL (Available Oct. 15, 1957)

Lead article entitled "ERFA" (European Radio Frequency Agency) goes into allocation of radio frequencies and cooperative actions between ERFA and NATO. "Miniaturization" by W.W. Hamilton shows how Elgin Watch Co. entered the field of miniaturization on a production scale. Unreliable equipment in the Electronic field is dealt with by Angus A. Macdonald's "What Price Reliability".

### U. S. NEWS & WORLD REPORT (Available Sept. 20, 1957)

WASHINGTON WHISPERS says SecDef Wilson is expected to open way to signing \$10 billion worth of defense contracts within next 30 days. Dep. SecDef Quarles reported in THE MARCH OF THE NEWS that he is confident "we will not be outdistanced" in the race to develop an ICBM.

### BUSINESS WEEK (Available Sept. 14, 1957)

Complaints of major defense contractors against Defense Department procurement policies piling up says WASHINGTON OUTLOOK.

### TIME (Available Sept. 23, 1957)

AF is budgeting \$3.5 billion for electronics, according to TIME CLOCK. This amount close to 20 per cent of AF spending v. 10 percent a few years ago (pg. 87).

## CAIDIN'S CORNER



### SIGNIFICANCE OF THE FIRST SPACE FLIGHT SYMPOSIUM

*By Martin Caidin*

Nearly nine months have passed since the revolutionary congregation of the nation's greats in space flight, under the auspices of the first Astronautics Symposium. This was a venture sponsored jointly, if you remember, by USAF's Office of Scientific Research, and General Dynamic's Convair, during February 18-21, 1957, in San Diego.

If you can describe this sort of thing in such a fashion, the Symposium was a howling success. There weren't any wild parties to celebrate the signing of a multi-zillion contract by any groups, nor did the attending members weave in gay fashion down the main street to emphasize their presence to the local gender.

Everyone was simply too busy listening, studying, discussing, learning. It's not real-

ized by many, but this first Symposium eventually is going to have more impact on our social and scientific lives than a hydrogen bomb going off in the middle of the next World's Fair.

Imagine, if you will, a concentration of the greatest brains in this scientific field collected beneath a single roof. The giants of engineering, propulsion, electronics, human factors, astronomy, metallurgy, chemistry, communications... the whole vast assembly of scientific and technological endeavor which constitutes this violently expanding sphere of *Astronautics*.

They came, not merely to expound their own proposals or to gain further recognition or to down draughts of beer with old college fellows, but to *learn*. Great scientists, the



holy of the fledglings in the field, all tightly packed into stuffy, humid rooms, attentive, searching, seeking, jotting down notes furiously.

With representatives of AFOSR and Convair I watched these men. It was astonishing, after attending previous scientific sessions where no man dared trespass upon his colleagues' fields, to hear scientists ask for criticism, for evaluation, for new ideas. Any ideas.

This was — and is — the true value of the Astronautics Symposium. It turned out to be far more than merely a space flight brain-trust. It was a catalyst, a simulator, not merely of new ideas, but of a determination to pool all the resources of science and technology represented by these men into the enormous effort it will require to lift man beyond this planet.

Space flight, if we wish to split hairs, has already been accomplished. Man has been above some 97 percent of his atmosphere. This is barely a fleeting probe, no more than the merest gasp of our air ocean. It is a first step, enormous, yet simple. It only whets the appetite.

Space flight calls for virtually every segment of science and industry to integrate their abilities into a single, vast and coordinated effort. Nothing less than this will suffice. The Astronautics Symposium was ringing proof that exactly this will be done, that it is being done. There was no argument as to distinction between government-military and pure science.

The distinction doesn't exist. That fact was recognized at the Symposium. Philosophical arguments were left for problems at hand,

not for simple wishes as to wanting a rose-colored endeavor filled only with dedicated people. The scientist who deplores the taint of the military is worse than unrealistic; he is a fool. Because of the enormous drain on natural energy, astronautics must of necessity be sponsored by that organization best equipped to integrate all those facilities and groups astronautics demands — and that organization is government-military. There just isn't any other way.

Both Convair and AFOSR deserve tremendous credit for taking the initiative to launch this first Symposium which, it is hoped, will be followed by many more. There's no question but that these sessions are more than merely important to the development of manned space flight; they are indispensable if we wish to slice years off the schedule and learn enough to hold down the casualties which any such effort, resting as it does upon the performance of violently explosive chemicals in hypersonic flight, is certain to incur.

Whatever the problems at hand, the Symposium stressed clearly that we are well on the way to manned flight in space. I watched one white-haired scientist, a man who's been dedicated to astronautics since before most of us were in diapers. During one session he stood at the back of the room, alone, watching the other scientists and engineers and doctors, listening intently to their words, the heated discussions, the scribbling of notes, the questions hurled from the floor.

There was the trace of a smile on his face. I'll bet that in his mind he could see the first man stepping down from a silver ship onto the moon's pumice.

• END •

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